REMARKS

The original Preliminary Amendment filed with this Divisional Application set forth the status of the Parent Application and it is requested that this information now be replaced with the current proposed status identifying the issued patent.

The claims have been amended to remove the restricted Claims 18-22 and to address the minor antecedent basis of rejection of the claims. It is believed that rejection under 35 U.S.C. §112 is now moot.

Claim 1 was rejected under 35 U.S.C. §112, first paragraph, by a contention that the specification did not provide an enablement of what a person of ordinary skill in this field would reasonably understand with regard to the term "most recently" acquired NC data.

In this regard, this specific terminology was originally set forth in the Parent Application, Claim 1, Lines 12-17, a copy of which is attached hereto. The specification has now been amended to add this specific terminology into the body of the specification on Page 23.

The Office Action rejected Claims 1-3, 5, 10, 11 and 13 as being anticipated by the *Nakamura* (U.S. Patent No. 5,757,648). Additionally, Claims 4, 6, 12 and 14 were rejected over a combination of the *Nakamura* reference in view of the *Kobayashi et al* (U.S. Patent No. 5,822,210).

The cited prior art, and specifically the *Nakamura* reference, has some similarity to the conventional teachings that have been set forth in our specification on Pages 3-5; that is NC data may be changed to adopt to updated parts, tables, quantities, design specification changes, inspection feedback to CAM systems, etc., and it is important to manage different versions of the NC data and recognize the latest versions. Our present invention, in this crowded field, addresses these matters in a highly efficient, innovative manner.

An understanding of the generation of the differences in NC data between stored NC data that has been most recently stored prior to the generated NC data can be appreciated by reviewing Figure 6A and Figure 6B and the description, for example, under the difference display function 43 set forth on Pages 22 and 23, wherein a display of the difference between two pieces of data are graphically illustrated. To appreciate, however, the actual processing of this function by an NC management system, the flowchart of Figure 16 and the construction of Figure 21 would be understood by a person of ordinary skill in this field, as disclosing an [2], NC Data Batch Incorporation Function in correlation with the [4] Line Manager Data Feedback Function that sends, as feedback, the data obtained during actual manufacturing stages in the mounting apparatus via the line manager. Feedback data is stored as fact NC data, see page 25 (second to the last paragraph) of our specification.

Additionally, Figure 21 shows the construction of the NC Data Management System described on Page 26, starting at Line 17, wherein the NC Data Management System incorporates production plan information online that could be created by a scheduler or the like, and based on the incorporated information, checks on the preparation of the NC data to be downloaded into each piece of equipment. The NC Data Management System can further manage a plurality of versions of NC data, wherein different versions are generated due to specification changes or due to additional data obtained during the actual mounting by the mounting equipment, thereby permitting a feedback of production activity. As noted on Page 28, Line 5, the NC Data Management Apparatus may compare NC data generated from design information by a CAM system with inspected NC data that has been adjusted so that each piece of equipment can produce a conforming item, and send data showing results of the comparison to a CAM system master as a feedback. Outputting a difference as shown in Figure 6, enables such

difference data to be generated and observed for editing. Thus, Figure 6 supports the NC Data Difference Function and this function will be supported in terms of the most recently acquired NC data as explained in the specification at Page 23, Lines 10-21, wherein two management numbers can be specified as objects to be compared with each other, a different tool is automatically activated and the difference is acquired and displayed. From this description, it is understood that the time frame of "most recently" corresponds to the time at which two management numbers are specified as targets of the comparison to automatically activate the difference tool. More specifically, the time frame of "most recently," corresponds to the time at which the necessary data is fetched by the number [2] NC Data Batch Incorporation Function and the [4] Line Manager Data Feedback Function that are schematically shown in Figure 16.

The *Nakamura* reference discloses a machine tool control system, as noted above, somewhat similar in characteristics to the description of the prior art set forth in our specification. Three different embodiments are disclosed and can be characterized as follows. The first embodiment set forth, for example in Figure 4, provides a capacity of analyzing the current operating condition and status of a plurality of machine equipment through a plurality of terminals and selecting a schedule that can be implemented by an appropriate one of the machine equipment.

The Office Action noted the disclosure in Column 4, Line 57-64, which basically is describing a Table that is set up for a particular product with quantities, machine type, machine programming name and delivery time. The delivery time, however, is simply indicating a priority scheduling of either an immediate time frame of the present day, a normal time of within three days from the present day, or a later time frame of within one week from the present day.

As can be appreciated, an immediate time frame simply prioritizes and would direct which piece of equipment would be utilized to produce a particular product.

The second embodiment provides a capacity to reprogram a machine in order to implement a schedule that may be transferred to another machine equipment which the substituted equipment can still perform, but perhaps with a different tool set attached thereto. Thus, if a hole was to be drilled by a laser but an alternative piece of equipment could use a drill to produce the hole, an adaptation of the program could be implemented so that production could be prioritized on the substituted equipment.

In the third embodiment, there is an interaction with a scheduling table and to provide a machine time estimation to enable a further improvement in scheduling the availability of each of the machine equipment for performing production. Thus, as noted on Column 10, Lines 24-27, this estimation can be used to decide which machine will handle a particular production run.

The Office Action indicated that Figure 9 of the *Nakamura* reference taught a difference obtaining step. In actuality, Figure 9 teaches a conversion of a program for machine equipment C to adapt it to a separate machine equipment D and does not output the obtained differences. Rather, the *Nakamura* reference discloses a machine tool control system that when a machine equipment is determined to be in a troubled condition and can be replaced with a substitute machining equipment, it converts the program for the machining equipment from the original designated machine to the substitute machine. The *Nakamura* reference neither discloses nor suggests obtaining differences between a schedule and the NC data. The display function referred to in Column 7, Lines 24-29, lets an operator input information by a keyboard or a mouse to permit further modification. For example, the number of pieces of product may no longer be the original scheduled amount because either pieces of product have already been

manufactured on the troubled machine or an alteration in the schedule, therefore, the operator could enter further modifications.

The *Kobayashi et al* reference enables an automatic creation of NC data by putting information relating to surface mount technology in the form of a database. More specifically, the *Kobayashi et al* reference enables the creation of an electronic instruction manual to assist in a setup operation of a specific piece of equipment. Thus, before printed circuit boards are actually manufactured, a preparatory operation is required in which the parts, reels and cartridges necessary for manufacturing the printed circuit boards are prepared and loaded or unloaded as necessary. This is facilitated by creating a specific electronic instruction manual that can be provided at the site of the particular machine to assist the operator of a particular CNC apparatus.

There is no teaching of generating and disclosing differences in NC data in an automatic fashion to enable an editing and selection of the optimum NC data. Thus, even though *Kobayashi et al* suggests that NC data can be replaced or changed in an automatic fashion, it does not teach the desirable features of the present invention that can obtain differences between the production schedule and the NC data, to thereby enable a higher quality piece of NC data then previously used ones to be selected and to enable the NC data to be updated.

The present invention enables the production system to handle effectively a situation which, for example, due to the introduction of a new type of printed circuit board, certain types of NC data can no longer be utilized.

In summary, neither the *Nakamura* nor the *Kobayashi et al* references alone or together teach generating the differences between stored NC data that has been most recently stored prior to the generated NC data, and the generated NC data that has been created from a production schedule and to output the obtained differences.

It should be noted that the burden of establishing a *prima facie* case of obviousness lies with the Patent Office. *In re Fine,* 5 USPQ2d 1596 (Fed. Cir. 1988) (stating: "The PTO has the burden under section 103 to establish a *prima facie* case of obviousness"). To establish a *prima facie* case of obviousness, (1) there must be some suggestion or motivation (either in the references themselves or in the knowledge generally available to one of ordinary skill in the art) to combine the reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference must teach or suggest all the claim limitations. See *MPEP* §§2142-43.

It is believed that Applicant has now more than adequately established the foundation for the terminology used in its claims and it should be readily apparent that this terminology more than adequately assists in distinguishing over any combination of the references of record.

The references of record do not suggest or teach any reason why the *Kobayashi et al* reference would be integrated into the disclosure of any of the three separate embodiments of the *Nakamura* disclosure.

Accordingly, it is believed that the case is now in condition for allowance and early notification of the same is requested. If the Examiner believes a telephone interview would help with the further prosecution of this case, it is respectfully requested that you contact the undersigned attorney for a phone interview.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 19, 2005.

By: Lori Lapidario

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Dated: August 19, 2005

Respectfully submitted,

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What is claimed is:

1. A production system including a production line being a series of a plurality of pieces of production equipment each of which has a parts supply unit, the production system comprising:

an NC management apparatus that is connected with each piece of the production equipment via a local-area network and acquires therefrom NC data used for operating each piece of the production equipment; and

a scheduling apparatus that generates a production schedule and transmits the generated production schedule to the NC management apparatus via the local-area network, wherein

the NC management apparatus generates, for each piece of the production equipment, data that is required to perform production according to the production schedule, obtains, for each piece of the production equipment, differences between current NC data that has been acquired the most recently and the generated data, and outputs the obtained differences.

2. A production system including a production line being a series of a plurality of pieces of production equipment each of which has a parts supply unit, the production system comprising:

a LAN port that conducts on-line communications with a scheduling apparatus and each piece of the production equipment via a local-area network;

a production schedule acquiring means for acquiring a